NEW LEPIDOPTERA PESTS: *CACYREUS MARSALLI* (LYCAENIDAE) ON GERANIUM AND *DUPONCHELIA FOVEALIS* (CRAMBIDAE) ON STRAWBERRY IN ACHAIA GREECE

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Mantzoukas, S. & Manoyssopoulos, I. New Lepidoptera pests: *Cacyreus marsalli* Butler, 1898 on geranium and *Duponchelia fovealis* (Crambidae) on strawberry in Achaia Greece. Abstract. October 2014 and May 2015, samples of infested geranium plants (*Pelargonium* spp.) and strawberry fruits, which were collected from a local professional farmer from Erineos and Sageika area, Achaia, Peloponnese, Greece, were received at the Institute of Plant Protection in Achaia, Greece. Larvae were taken from infested plants and kept under laboratory conditions at 25±1°C, 70±5% RH and under a photoperiod of 16L: 8D until adults emerged. Adults were identified as the Geranium Bronze Butterfly, *Cacyreus marshalli* Butler (Lepidoptera: Lycaenidae) and European pepper moth, *Duponchelia fovealis* Zeller (Lepidoptera: Crambidae). These two Lepidoptera species are recorded for the first time in Achaia, Peloponnese, Greece.

Key words: Lepidoptera, Lycaenidae, Crambidae, *Cacyreus marshalli, Duponchelia fovealis*, Greece, Achaia.

Манцоукас, С. и Манойссопулос, И. Новые чешуекрылые вредители: *Cacyreus marsalli* Butler, 1898 на герани и *Duponchelia fovealis* (Crambidae) на землянике в Ахайе, Греция. Резюме. В октябре 2014 и мае 2015 пробы зараженных растений герани (*Pelargonium* spp.) и плодов земляники, собранные профессиональным фермером в районах Эринеоса и Сагейка (Ахайя, Пелопоннес), были получены Институтом защиты растений в Ахайе (Греция). Гусениц с зараженных растений содержали в лабораторных условиях при 25±1°C, 70±5% относительной влажности и с фотопериодом в 16L: 8D до выхода имаго. Имаго были определены как бронзовая гераневая голубянка, *Cacyreus marshalli* Butler (Lepidoptera: Lycaenidae) и европейская перечная огневка, *Duponchelia fovealis* Zeller (Lepidoptera: Crambidae). Оба вида бабочек впервые зарегистрированы в Ахайе.

Ключевые слова: Lepidoptera, Lycaenidae, Crambidae, *Cacyreus marshalli, Duponchelia fovealis*, Греция, Ахайя.

Манцоукас, С. та Манойсопулос, І. Нові лускокрилі шкідники: *Cacyreus marsalli* Butler, 1898 на герані і *Duponchelia fovealis* (Crambidae) на суниці в Ахайї, Греція. Резюме. У жовтні 2014 та травні 2015 проби заражених рослин герані (*Pelargonium* spp.) і плодів суниці, зібрані професійним фермером у районах Ерінеоса и Сагейка (Ахайя, Пелопонес), було одержано Інститутом захисту рослин в Ахайї (Греция). Гусениць із заражених рослин утримували в лабораторних умовах за температури 25±1°C, 70±5% відносної вологості, та з фотоперіодом у 16L: 8D до виходу імаго. Імаго було визначено як бронзового гераневого синявця, *Cacyreus marshalli* Butler (Lepidoptera: Lycaenidae) та європейську перцеву вогнівку, *Duponchelia fovealis* Zeller (Lepidoptera: Crambidae). Обидва види метеликів уперше зареєстровано в Ахйї.

Ключові слова: Lepidoptera, Lycaenidae, Crambidae, *Cacyreus marshalli, Duponchelia fovealis*, Греція, Ахайя.

Introduction

Cacyreus marshalli Butler, 1898, originally described from South Africa, was accidentally introduced into the Balearic archipelago through importation of its ornamental host plant (*Pelargonium*; Geraniaceae), and has been expanding its range in Europe and northern Africa since 1988 (Marko & Verovnik, 2009; Tshikolovets, 2011). The distribution map of *C. marshalli* includes areas in the Palaearctic region such as Canary Islands, Madeira, Morocco, Iberian Peninsula, Balearic Islands, southern France, Corsica, Sardinia, Italy, Switzerland, Slovenia, Croatia, Malta, Greece, Turkey, England, the Netherlands, Belgium, Sweden, Portugal and Germany (Dunkin, 2005, Ryrholm 2007; Tshikolovets, 2011; Soyhan et al., 2013). This is the first record in Peloponnese area (Achaia, Erineos). In Greece, the species also was recorded on Corfu in 2008 (Parker, 2010), in Attica (Athens suburbs & Spétses Island) (Anastassiu et al., 2010; Coutsis et al., 2011; Martinou et al., 2011) and in Crete (Anastassiu et al., 2010). Recorded host plants include *Geranium* and *Pelargonium* (Geraniaceae) (South Africa) as well as imported and cultivated *Pelargonium* in Europe (Eitschberger & Stamer, 1990; Marko & Verovnik, 2009; Martinou et al., 2011).

Duponchelia fovealis Zeller, 1847, first was identified in Italy in 1988 and after that in continental Europe

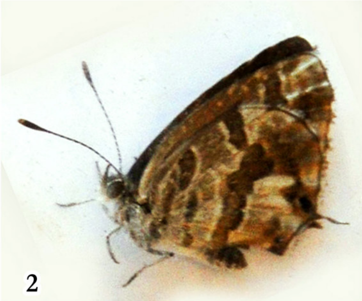
(Efil et al., 2014). In 1992 and in 2006, was reported ornamental host plant pest and in 2010 cause extensive damage to strawberries in Europe (Bonsignore et al., 2010; Zandigiacome et al., 2007). *D. fovealis* is a polyphagous pest (Bonsignore et al., 2010). Also was recorded in 2006, in the Crovova Region of Poland and in 2012 in Warsaw (Raczka et al., 2013). This polyphagous pest was documented for the first time in France in 2010 to have caused heavy damage to strawberry fields (Main, 2012). The latest infection was recorded in Bulgaria in 2012 and in Turkish provinces of Adana and Mersin in 2011 and in 2012 (Pencheva et al., 2012; Efil et al., 2014). *D. fovealis* in 2010 was referred as quarantinable pest (White, 2012).

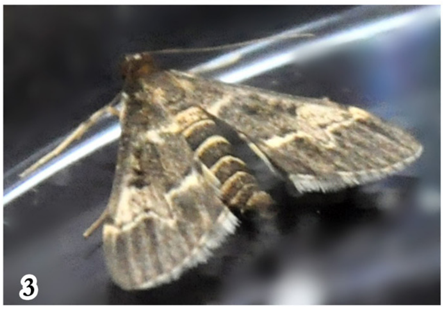
D. fovealis originates in the marshlands of southern Europe and the eastern Mediterranean region. It occurs on Mediterranean Islands (Corsica, Crete, Malta, Sardinia, Sicily) (Efil et al., 2014). *C. marshalli* is on the List of pests recommended for regulation as quarantine pests (EPPO A2). Even if, *C. marshalli* has not been regulated as a quarantine pest by European Regional Plant Protection Organizations (ERPPO), it has managed to spread rapidly in islands and mainland Spain and Italy (Favilli & Manganelli, 2006). The natural spread of this pest is very low as its flights are short in duration with frequent rests (Martinou et al., 2011). Geraniums are extensively grown as ornamental plants almost all over Europe, but in Mediterranean region (Spain, France, Italy, Greece) as well as North Africa, are at greater risk since their climatic conditions would allow the pest to overwinter outdoors. This is the first record of *C. marsali* and *D. fovealis* are recorded in Achaia, Peloponnese, Greece.

Results

This two new species *C. marsali* and *D. fovealis*, in Greek province of Achaia (Erineos and Sageika area) during 2014 and 2015 are recorded for the first time in Achaia, Peloponnese, Greece. The *C. marshalli* was found on *Pelargonium* leaves and the *D. fovealis* was found as larvae on Strawberry fruits.

This is the first record of *C. marshalli* and *D. fovealis* in Achaia area Greece. The identification of the species was based on infested geranium plant samples and strawberry samples received at the Crop Protection Institute in Achaia in October 2014 and in May 2015 from local's professional farmers. The plant samples (leaves stems from geranium plant and fruit from strawberry plants) were originally collected from Erineos, Achaia, Greece and Sageika, Achaia, Greece, the samples was maintained at 25±1°C for observation in the laboratory of Institute of Plant Protection. Based on the adult and larvae morphological characteristics, the species was identified as the Geranium Bronze Butterfly *C. marshalli* (Lepidoptera: Lycaenidae) and *D. fovealis* Zeller (Lepidoptera: Crambidae). The larvae of *C. marshalli* body shaggy and was green with pink markings (Figure 1). Adults have a bronze-brown colouring at the upper surface with white spots on the fringe and highly-patterned undersides (Figure 2). The *Duponchelia fovealis* adults have a wingspan of 19 to 21 mm. The forewings are gray-brown in color with two yellowish-white transverse lines. The outermost of these lines has a pronounced «finger» that points towards the back edge of the wing. When at rest, the wings are held out from the body forming a triangle. The adult body measures 9 to 12 mm in length (Bethke & Vander Mey, 2010; Bonsignore & Vacante, 2010; Brambila & Stocks, 2010). The head, antennae and body are olive brown. The abdomen has cream-colored rings encircling it. The legs are pale brown (Bethke & Vander Mey, 2010; Bonsignore & Vacante, 2010; Brambila & Stocks, 2010). The larvae body of this serious pest has a shiny dark head and a salmon white body with a line of separated brown to gray spots extending across and around each segment (Bethke & Vander Mey 2010, Bonsignore & Vacante, 2010; Brambila & Stocks, 2010; Hoffman, 2010). On some segments, there are two transverse rows of these spots. The pupae undergo pupation in a cocoon made of webbing, frass and soil particles and its yellow brown in color (Bethke & Vander Mey, 2010; Bonsignore & Vacante, 2010; Brambila & Stocks, 2010; Hoffman, 2010).





Figs 1-2. *Cacyreus marshalli* Butler (Lepidoptera: Lycaenidae): 1 larvae on *Geranium* plant leaf; adult butterfly. Fig. 3. *Duponchelia fovealis* Zeller (Lepidoptera: Crambidae) adult.

C. marshalli and *Duponchelia fovealis* natural enemies have not yet recorded in the Achaia area, Greece.

Therefore, there is important to initiate a monitoring program to indentify and record the natural enemies (predators, parasitoids, entomopathogens) that could be used as potential biocontrol agents for this important pests.

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